

## SOLAR OBSERVATIONS.

## SOLAR AND SKY RADIATION MEASUREMENTS DURING NOVEMBER, 1921.

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For a description of instruments and exposures, and an account of the method of obtaining and reducing the measurements, the reader is referred to this REVIEW for April, 1920, 48: 225.

Table 1 indicates that solar radiation intensities averaged slightly above the November normal at Washington, D. C., and Santa Fe, N. Mex., and slightly below at Lincoln, Nebr. At Madison, Wis., there were only two days with an average cloudiness below 60 per cent, and in consequence few solar radiation intensity measurements were made. Table 2 shows that the total radiation received on a horizontal surface was below the normal for November at both Washington and Madison, the deficiency at each station amounting to about 17 per cent.

Skylight-polarization measurements made on four days at Washington give a mean of 64 per cent and a maximum of 70 per cent on the 25th. At Madison, measurements obtained on the 4th give 71 per cent of polarization. The measurements obtained at Washington are average values for November at that station.

TABLE 1.—Solar radiation intensities during November, 1921.

[Gram-calories per minute per square centimeter of normal surface.]

## Washington, D. C.

		Sun's zenith distance.										
Date.	8 a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	Noon.	
	75th meri- dian time.	Air mass.										Local mean solar time.
		A. M.					P. M.					
		e.	5.0	4.0	3.0	2.0	*1.0	2.0	3.0	4.0	5.0	
Nov. 5.	mm.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	mm.	
10.	3.45			1.10	1.29				0.88	0.75	3.00	
15.	6.76	0.59	0.80	0.96	1.12		1.10		0.62		3.81	
16.	4.75		0.49	0.93	1.12						3.62	
18.	3.63										4.95	
22.	10.59			1.11							12.68	
25.	5.56		0.89	1.08	1.31	1.56	1.27	1.00	0.90	0.79	7.01	
25.	3.99					1.54	1.31	1.11	0.93	0.79	3.63	
30.	4.17	0.69									5.16	
Means.		(0.64)	0.73	1.02	1.21		1.23	(1.06)	0.83	0.78		
Departures.		-0.12	-0.12	+0.01	+0.03		+0.06	+0.08	+0.01	+0.05		

## Madison, Wis.

Nov. 1.	2.49			1.16	1.29		1.40				4.17
4.	5.36										5.16
29.	1.57				1.18						4.57
Means.				(1.16)	(1.24)		(1.40)				
Departures.				+0.01	-0.05		+0.05				

TABLE 1.—Solar radiation during November, 1921—Continued.

## Lincoln, Nebr.

		Sun's zenith distance.											
		8 a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	Noon.	
Date.	75th meridian time.	Air mass.										Local mean solar time.	
		A. M.					P. M.						
		e.	5.0	4.0	3.0	2.0	*1.0	2.0	3.0	4.0	5.0		e.
		mm.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.		mm.
Nov. 1.		4.37		1.04	1.14	1.36		1.35	1.22	1.04		5.16	
9.		3.00	0.90	0.93	1.08							3.45	
11.		2.62						1.14	1.25			3.15	
19.		2.16			1.03	1.31						4.17	
21.		2.62	1.00	1.13	1.25	1.39			1.13			2.87	
Means.			(0.95)	1.03	1.12	1.35		(1.40)	1.20	(1.04)			
Departures.			-0.03	-0.03	-0.09	-0.01		+0.01	-0.01	-0.02			

## Santa Fe, N. M.

Nov. 22.	1.78								1.13	1.28		2.36
23.	2.62							1.44		1.28	1.18	1.88
26.	3.63	1.15	1.21	1.39	1.50	1.62			1.37	1.19		3.15
28.	1.88	1.19	1.29	1.38	1.48							2.36
Means.		(1.17)	(1.25)	(1.38)	(1.49)			(1.44)	1.36	1.22		
Departures.		+0.01	+0.04	+0.02	+0.02			-0.02	+0.04	+0.02		

\* Extrapolated.

TABLE 2.—Solar and sky radiation received on a horizontal surface.

Week beginning.	Average daily radiation.			Average daily departure for the week.			Excess or deficiency since first of year.		
	Washington.	Madison.	Lincoln.	Washington.	Madison.	Lincoln.	Washington.	Madison.	Lincoln.
	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.
Oct. 29.	157	171		-95	-17		+2,701	-3,097	
Nov. 5.	225	190		-6	-12		+2,695	-3,181	
12.	190	99		-18	-54		+2,533	-3,500	
19.	162	92		-25	-46		+2,355	-3,881	
26.	108	69		-61	-59		+1,929	-4,263	

## MEASUREMENTS OF THE SOLAR CONSTANT OF RADIATION AT CALAMA, CHILE.

By C. G. ABBOT, Assistant Secretary.

[Smithsonian Institution, Washington, January —, 1922.]

NOTE.—In the December issue of this REVIEW, the publication of the reports from Calama, Chile, will be resumed and brought down to date.—EDITOR.